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in this issue

November Iowa Farm Science Reprints

(available about mid-month)

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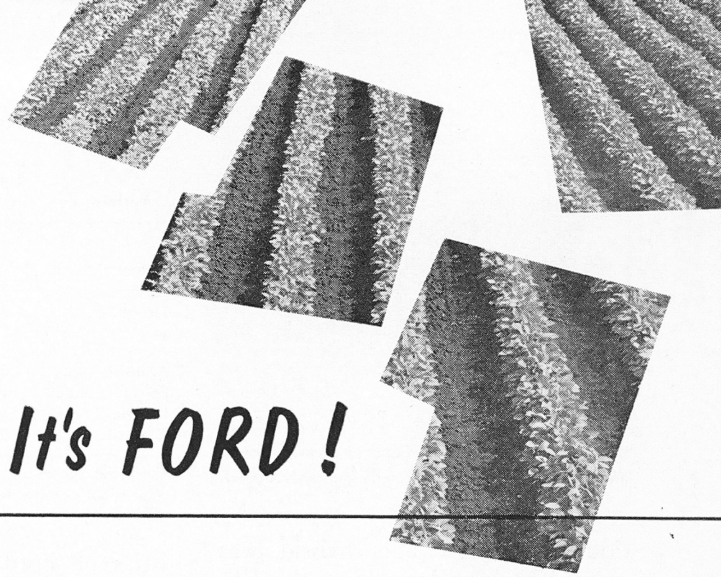


A New Soybean---It's FORD!

The new soybean variety, Ford, will be grown by farmers in north-central and south-central Iowa for the first time in 1959. Here are some details on Ford, on its performance in tests and on what you can expect of it.

by Charles R. Weber

FORD IS A NEW soybean variety for north-central and south-central Iowa. It's high yielding and good in oil content. It matures between Adams and Lincoln and is a week earlier than Clark. We consider Ford an improved replacement for Lincoln in both the north-central and south-central areas.

Iowa testing has shown that Ford:

—outyields Adams and Lincoln by an average of more than 2½ bushels per acre, ranking just below Clark in yield;

—matures about 2 days later than Adams, 1 day earlier than Lincoln and 7 days earlier than Clark;

—lodges slightly less than Adams, Lincoln and Clark but is about the same in height;

—is similar in oil and protein content to Lincoln and Clark.

Ford's Record . . .

The results of Iowa tests summarized in the table were obtained in northern, central and southern Iowa over the 7-year period 1951-57. Ford gave higher yields than Lincoln and Adams in 44 of 49 test comparisons and yielded higher than Clark in about half of the tests.

Ford stands up a little better than Adams, Lincoln and Clark but has about the same height and, thus, is satisfactory for combining. In oil content, Ford compares favorably with Lincoln and Clark but is slightly lower than Adams.

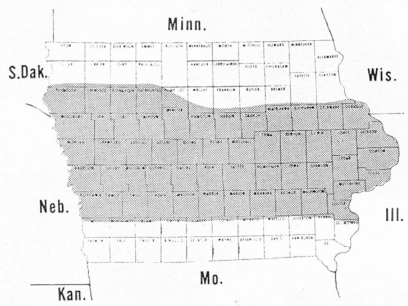
With normal planting dates, Ford should do best in central Iowa. It should be considered a full-season bean in north-central Iowa and a mid-season to early bean in the southern part of the state. Our results indicate that Ford can be grown successfully in the southern two-thirds of the state and should replace all Lincoln acreage and some of the acreage in Adams, Hawkeye and Clark.

What It Is . . .

Lincoln and Richland were crossed at the Iowa Experiment Sta-

Author Weber looks over a field of breeder's stock Ford soybeans in 1958. The Committee for Agricultural Development will increase the seed during 1959 for distribution to certified seed growers in 1960.

CHARLES R. WEBER is associate professor of agronomy, Iowa State College, and agronomist, Crops Research Division, ARS, USDA.



Map shows area where Ford is best adapted and roughly where seed will be distributed.

Performance of Ford and other soybean varieties in Iowa, 1951-57.

Variety	Bushels per acre	Lodging score[1]	Maturity	Height (inches)	Chemical composition[2]	
					Protein (%)	Oil (%)
		North, central and southern Iowa, 49 tests				
Adams	34.1	1.9	Sept. 22	41	39.0	22.1
Ford	37.1	1.7	Sept. 24	41	39.5	21.6
Lincoln	34.7	2.0	Sept. 25	41	39.8	21.8
		Central and southern Iowa, 28 tests				
Adams	34.6	1.8	Sept. 21	41	39.0	22.1
Ford	38.2	1.7	Sept. 23	41	39.5	21.6
Lincoln	36.1	1.9	Sept. 24	41	39.8	21.8
Clark	39.4	1.8	Sept. 30	42	40.1	21.5

[1]Lodging scores range from 1 (with almost all plants erect) to 5 (with almost all plants down badly).
[2]Chemical composition determined on a moisture-free basis.

tion in 1941. This hybrid was crossed back to Lincoln at the Illinois Experiment Station. From that backcross, hundreds of selections were made at Iowa State College over a 13-year period. One of these selections was named Ford. It represents the twenty-first of a series of superior varieties developed since 1944 for different soybean-producing areas in the United States.

Testing and the initial increase of Ford were done cooperatively by a number of state experiment stations in the North Central Region and the United States Regional Soybean Laboratory. Participating in the regional laboratory are the Crops Research Division, Agricultural Research Service, USDA, and 24 individual state experiment stations.

How It Looks . . .

The plant and seed characteristics of Ford are very much like those of Lincoln, one of Ford's parents, and somewhat similar to those of Clark, Ford's "sister." Both Clark and Chippewa resulted from the same initial cross as Ford. All three have "three-quarters blood" of Lincoln. Ford, however, matures a week earlier than Clark and more than 2 weeks later than Chippewa.

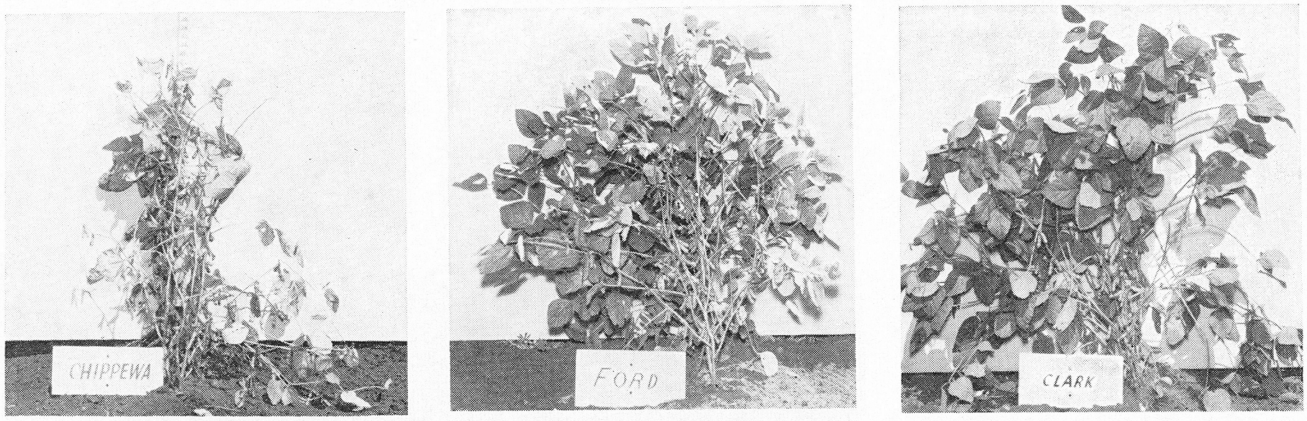
Ford is medium tall and usually erect. It has brown pubescence (hairs) on the stem and pods like Lincoln, but, unlike Clark and Chippewa, which have purple flowers, Ford has white flowers as does Lincoln. Ford has a black hilum (seed scar), and its nearly round yellow seeds are slightly larger than those of Lincoln or Adams.

Seed . . .

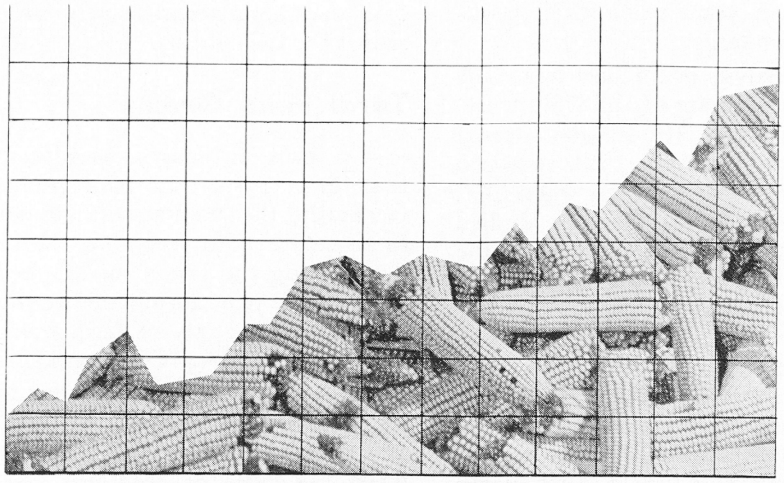
Ford is being increased and distributed to seed growers in Iowa, Nebraska and South Dakota for 1959. It will be 1960 before seed will be generally available. Enough seed was produced in 1958 to permit an initial distribution for seed increase in 52 Iowa counties. The shaded portion of the map shows where Ford is best adapted in Iowa and where seed will be distributed for increase in 1959.

The seed distribution plan will be similar to that used for other new varieties of soybeans and oats —through county seed distribution committees. The purpose of this method of distribution is to make large quantities of reasonably priced, high-quality seed of new varieties available to Iowa farmers in the shortest possible time.

Ford's record indicates that it's another step forward for soybean producers in reducing production costs per bushel. Seed will be limited for 1959 but will be more generally available in 1960.



Left: Chippewa—best for northern Iowa. Center: Ford—best for central Iowa. Right: Clark—best for southern Iowa. All three photos were taken in early September at Ames. Note that Chippewa was nearly mature but shorter than either of the others. Ford was just beginning to yellow its leaves—another 3 weeks to maturity. Clark was green, with unfilled pods at the top—another 4 weeks to maturity. Neither Chippewa nor Clark were grown in their best area of adaptation. All three varieties, however, are closely related and were selected from the same initial backcross.



Does the Loan and Storage Program Support Corn Prices?

Market prices of corn in recent years have been falling below the loan ("support") rate. Some attribute this to the large stocks which have built up. Research evidence, however, indicates "not necessarily."

by Geoffrey Shepherd and Allen B. Richards

DURING THE past few years, the price supports for corn—the CCC loans—haven't supported the price of corn as well as they used to. The price of corn has been falling farther and farther below the noncompliance loan rate.

The United States average price of corn received by farmers has been running about 35 cents below the national average loan rate in recent years (see chart). The price has even been running below the loan rate for noncompliers.

Why?

Why has the price of corn declined below the loan rate? There are several reasons the price of corn could be expected to sag a few cents below the support level—the system of "weighting" the loan rates, the bother of taking out a loan on corn, etc. The "effective" loan rate, therefore, is several cents below the announced rate. But, in recent years, this still leaves the market price of corn running 25-30 cents below the effective loan rate.

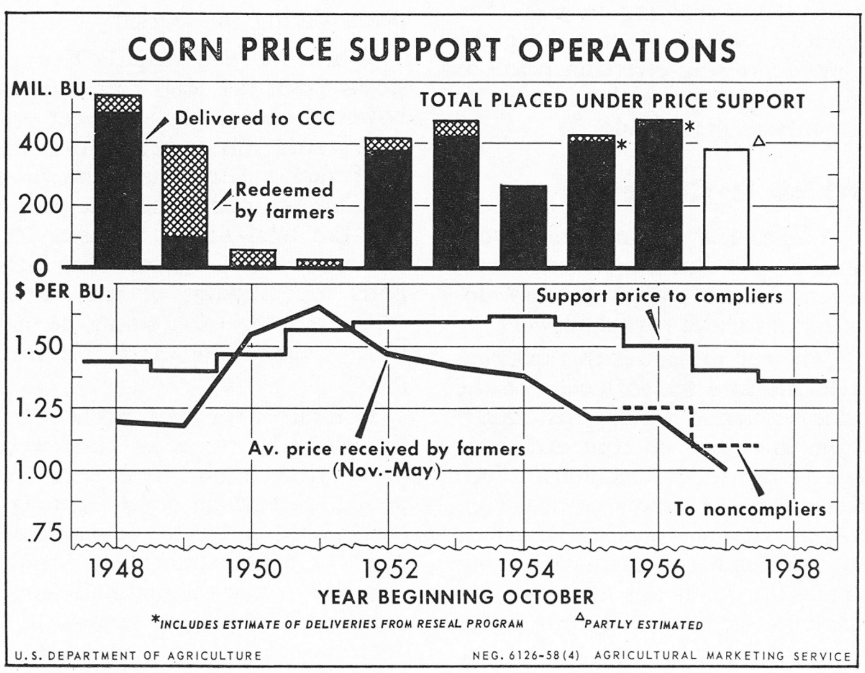
The decline in corn prices has taken place in spite of substantial use of the corn loan program. The upper part of the chart shows that in most recent years nearly ½ billion bushels of corn per year have been placed under price support. And most of it has been left there—taken over by the CCC.

Stocks of corn carried over by the CCC at the end of the crop year each October have been increasing steadily since 1951. Carryover stocks for each year since 1933, when the CCC began operations, are shown in the table. Stocks first rose above 1 billion bushels in October 1956. They reached 1.3 billion bushels last year and are expected to reach 1.6 billion this fall.

Depress Corn Price?

Are these large stocks of corn depressing corn prices? Are they the reason corn prices have dropped below the loan rate? Are the storage operations of the CCC only a lot of useless motions—since the corn the CCC takes over only undergoes a change of ownership, with the same amount in total, no matter who owns it?

This article is based partly on research conducted under Project NCM-11, North Central Regional Research Committee on Agricultural Price Policy.



GEOFFREY SHEPHERD is professor of agricultural economics and a member of the staff of the Center for Agricultural Adjustment. ALLEN B. RICHARDS is an associate in agricultural economics.

Quantities of corn under loan or owned by the CCC at the end of the crop year.

Year beginning October	Corn under loan or owned by CCC (million bushels)
1933	82
1934	.....
1935	.....
1936	.....
1937	45
1938	258
1939	471
1940	403
1941	197
1942	8
1943	6
1944	9
1945	.....
1946	.....
1947	.....
1948	493
1949	650
1950	488
1951	306
1952	580
1953	736
1954	870
1955	1,060
1956	1,295
1957[1]	1,600

[1]Preliminary

There are some real differences of opinion on the answers to these questions. At one extreme is the belief that the stocks have no depressing effect on prices because the stocks are withheld from the market. That is, the stocks have no more effect than if they had been consumed and taken entirely out of the market.

At the other extreme is the belief that a bushel of corn is still a bushel of corn—and has the same influence on prices—no matter who owns it. According to this idea, the CCC stocks of corn have the same depressing effect on prices as if they were owned by farmers or the private grain trade.

Which Is Correct?

It's not easy to find and set out the answer. But the evidence from several studies, when brought together, provides partial answers.

One way to answer this question is to measure the influence of the basic economic factors that determine the price of corn each year aside from CCC operations. Such factors are the supply of total feed concentrates, the prices of livestock and the number of grain-consuming livestock. With this done, we can check to see if actual corn prices were out of line with these basic factors in years when CCC stocks have been large.

An analysis of this sort was made by Gordon King of the USDA several years ago. His analysis covered the period from 1921 through 1951, omitting the years when CCC stocks were large. Then he applied the results of this analysis to the years when CCC stocks were large. He found that corn prices in those years were higher than they would have been in their normal relation to the basic economic factors that determine the price of corn. He concluded that the results of his study suggested that the CCC stocks are usually isolated in such a way as not to affect the market price. He added, however, that the relationships among the basic factors might have changed after World War II from what they were before the war.

A more recent study, conducted here at Ames, is based on postwar data from 1946 to 1957. During this period, livestock prices as a group and the general price level were more stable than they were over the 1920-51 period. In this study, we plotted the price of corn each year since 1946 against the total supply of corn each year.

Our results indicated that total corn supply doesn't completely determine the price of corn. We also found that including livestock numbers and prices as additional factors didn't help much more than corn supply alone in explaining the year-to-year differences in corn prices during this period.

When we deducted CCC corn stocks from the total corn supply, however, we found a different pattern. And this indicated that the chief factor determining the price of corn each year during the period was the total supply of corn, *excluding* the CCC stocks. This supports the findings of the earlier study that the CCC stocks do not have a depressing effect on corn prices.

In some of the most recent years, however, the prices of corn were lower than might have been expected. Something depressed prices particularly in 1957. It may have been the fact that corn was wet in that year or that the unusually large supplies of other feed grains had a depressing effect on corn prices—or it may have been the very large size of the CCC stocks.

Total Feed Grains . . .

We made an analysis similar to that for corn for total feed grains. Generally, the results were similar to those for corn; the chief factor determining the prices for all feed grains each year during the period was the total supply of feed grains—again, excluding CCC stocks.

There were differences among years, however, as between corn and all feed grains. And in 1957, when the price of corn was considerably depressed, the prices for total feed grains were not.

The Meaning . . .

Until we can more completely explain these differences in results, we, too, have some reservations about drawing hard and fast conclusions about the effects of the CCC stocks. The bulk of the evidence indicates, however, that most of the time the CCC stocks are pretty effectively withheld from the market. And they don't appear in themselves to have a depressing effect on corn prices.

Rather, it appears that what depresses prices below the loan rates is the large size of the supplies of corn and other feed grains—even after the CCC stocks are deducted from total supplies.

Putting it another way, our analysis indicates that with a given level of demand, the thing that determines the prices of corn and other feed grains is *not* the loan rates in and of themselves. Instead, it's the market supplies of these grains—the current production plus the privately held stocks from the old crop, but excluding the stocks owned by the CCC.

This tentative conclusion needs to be tested further by additional statistical research. If it continues to stand up, it would lead to an important conclusion regarding farm policy: that the CCC loan and storage programs can be used effectively for stabilizing corn and other feed grain supplies and prices near their long-run average levels but cannot be used effectively for raising the long-run level of prices. The latter would require production controls to reduce total supplies.

When Will It Snow in the Fall?

It's not possible to forecast the date of the first snowfall very far in advance for a given year. But weather records do make it possible to predict the chances of receiving snowfall on or before a given date.

by R. H. Shaw

WILL YOUR corn be in the crib this year before it snows? Will the youngsters be using their sleds on Thanksgiving? When will you first have to use your snow shovel? No doubt you've heard questions like these many times, or you may have asked them of yourself.

We can't tell you exactly or predict very far in advance when it will snow in any given year. But, from long-time records, we can tell what the chances are of snow having fallen by a certain time of the year. For this article, we'll use a snowfall of 1 inch or more.

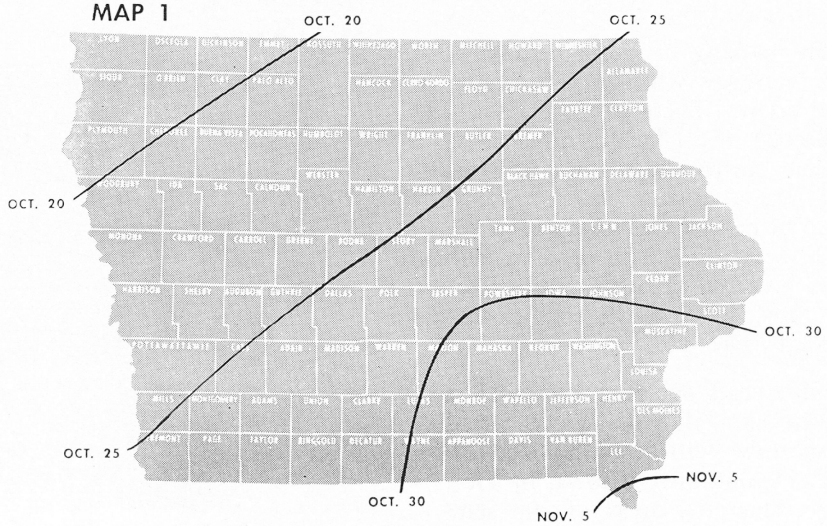
How Early?

How early can we get a snowfall of 1 inch or more in the fall? On rare occasions, quite early. On Sept. 25, 1942, for example, an early snowstorm moved across the state. It left 1 inch of snow at many places and up to 4 inches in a few locations. The chances of an early snow like that occurring again, however, are quite slim—less than 1 in 100—so don't plan on it for any particular year.

How Often?

The four maps with this article

MAP 1



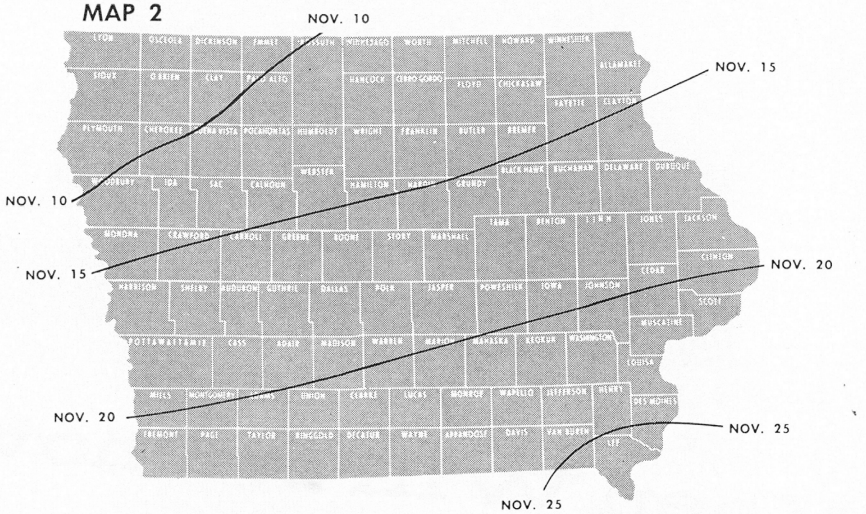
In 1 year out of 20, the first snowfall of 1 inch or more in a 24-hour period will have occurred on or before the dates shown.

R. H. SHAW is professor of agricultural climatology.

are designed to show the *chances* of receiving an inch or more of snowfall on or before a particular date of each year. The dates are *not* a prediction of snow for the dates shown; it isn't possible to do this at present. Rather, the dates indicated by each map show the chances of having a snowfall of 1 inch or more on or before each date.

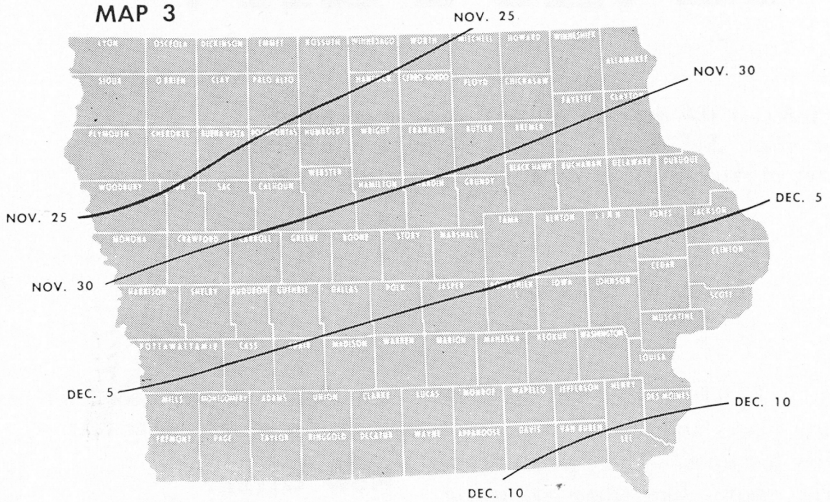
In Map 1, for example, you can see that there's 1 chance in 20 of a 1-inch snowfall having occurred before Oct. 20 in northwestern Iowa. In extreme southeastern Iowa, the comparable date is Nov. 5. This means simply that in about 1 year out of 20, the first snowfall of 1 inch or more will have occurred by these dates.

MAP 2



In 1 year out of 4, the first snowfall of 1 inch or more in a 24-hour period will have occurred on or before the dates shown.

MAP 3



In 1 year out of 2, the first snowfall of 1 inch or more in a 24-hour period will have occurred on or before the dates shown.

"white Christmas" since the snowfall may already have occurred and melted.

Show Chances . . .

Remember, in using these maps, that the dates shown represent your chances of receiving a 1-inch or greater snowfall by the dates indicated. Listen to the regular weather forecasts to get short-range predictions of when snow is actually expected.

By looking at the other maps, you can see when other chances will occur. There is 1 chance in 4 (Map 2) of a 1-inch or more snowfall in northwestern Iowa by Nov. 10; in southeastern Iowa, by Nov. 25. In half of the years (Map 3), a snowfall of 1 inch or more will have occurred in northwestern Iowa by Nov. 25 and, in southeastern Iowa, by Dec. 10.

In 3 years out of 4 (Map 4), a 1-inch snowfall will have occurred in northwestern Iowa by Dec. 10 and, in southeastern Iowa, by Dec. 25. Thus, all areas of the state have a good chance of having had this much snow or more by Christmas. But this doesn't guarantee a

MAP 4

In 3 years out of 4, the first snowfall of 1 inch or more in a 24-hour period will have occurred on or before the dates shown.

For Your Interest...

farm business and management

Study Location of Meatpacking Industry

IOWA IS in a key position in the national livestock economy and is the major meat-exporting state. Iowa and 11 other north-central states account for about 90 percent of the outshipments of meat products from individual states. In contrast, the New England and Atlantic states, which include 40 percent of the national population, absorb about 75 percent of the value of meat product inshipments and make 2 percent of the outshipments.

Economists call the midwestern packing plants "supply oriented"—being located near the major sources of livestock supplies. The eastern plants, in contrast, are called "market oriented"—being located nearer to the major meat products market than to livestock supplies.

One of the important factors in determining the location of the meatpacking industry, economists believe, is the relative costs of transporting live animals compared with those of transporting the meat products from them. So far the cost structures have apparently favored supply-oriented location over market orientation. Looking to the future, however, Experiment Station and USDA agricultural economists are initiating a study of (1) the movement of livestock and meats by truck and rail and (2) the costs of transportation of these by rail and truck.

The study will permit current knowledge of the situation and make it possible to estimate the impact of any future changes in rail and truck transportation rates for livestock and meats. W. R. Maki, W. C. Motes and W. H. Thompson are conducting the work at Iowa State College.

Improve Management of Local Farm Businesses?

DETAILED RECORDS of a group of country elevator and feed and other supply retail cooperatives in Iowa are being studied by researchers at the Experiment Station. The purpose is to find out if the results indicate possible improvements which could be considered by these businesses.

Particular phases of management under study include management of plant and equipment, of personnel, of finances, of customer relations, of wholesale and retail trading, and of inventories and accounts receivable.

poultry

Iowa Grain Feeds Arkansas Broilers

FARMS IN Iowa and adjoining states raise most of the corn and also a large proportion of the soybeans to make soybean meal which is fed in the Arkansas broiler industry. Most of the corn moves by truck from country elevators in the Midwest to the feed mills in Arkansas. Generally this corn is transported in large semi-trailer trucks. The transportation cost from central Iowa to northern Arkansas averages about 5 cents per bushel. The corn demanded is of uniform but not necessarily of top quality.

Broiler feed mills in Arkansas prefer 50-percent-protein soybean meal and pay a premium to get it from the few processors in the Midwest who make it. Much of the soybean meal is also transported by truck.

These are some of the results of a study of transportation methods and costs of poultry products and feeds and of the factors which affect their costs. Richard Phillips and W. H. Thompson of the Experiment Station are directing the study in cooperation with the Farmer Cooperative Service, USDA.

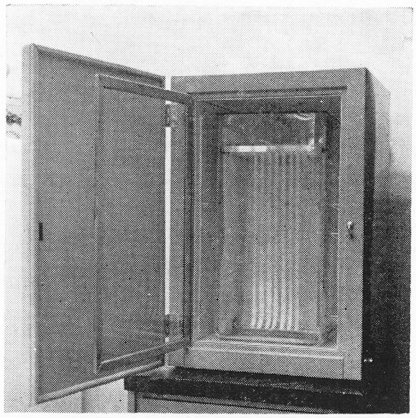
Phillips and Thompson add that a good brokerage service is available to the truckers at the Arkansas end for corn and soybean meal. They suggest that a similar service might be established in Iowa and other midwestern states for more orderly marketing of corn and soybean meal to the truckers.

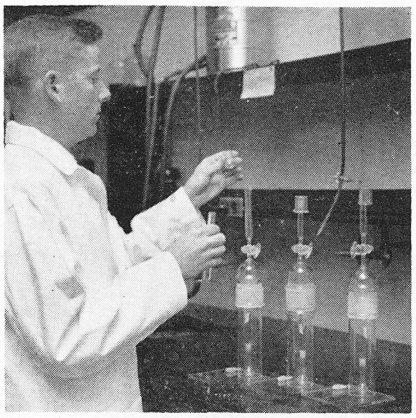
Test Protein, Calorie Effects on Turkey Growth

IN AN effort to learn more about the energy, protein and amino acid requirements of turkeys, S. L. Balloun and R. E. Phillips of the Experiment Station are conducting various experiments evaluating the relationship between calorie and protein intake. Supplementation with lysine is also being studied.

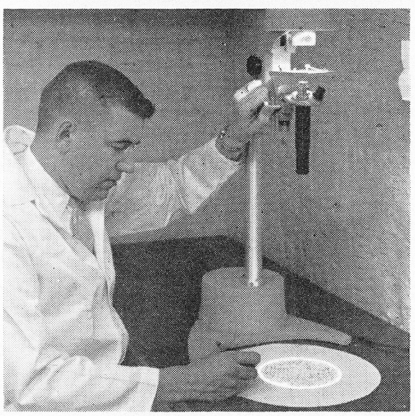
In one experiment with starting poults (0-6 weeks), diets prepared to provide all possible combinations of protein levels of 24, 28 and 32 percent and energy levels of 800, 900 and 1,000 calories per pound were fed to poults. At the two lower protein levels, each diet was tested with and without lysine supplementation.

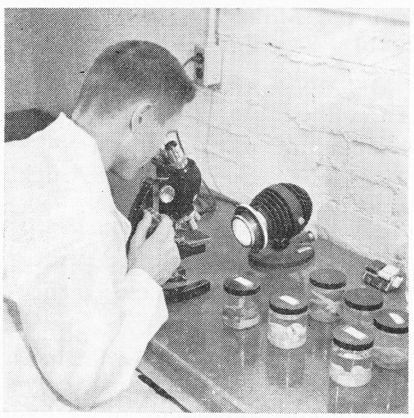
There was no indication of an energy and protein interaction. Increasing the protein from 24 to 28 percent improved weight gains and feed efficiency. The level of energy had no meaningful effect on the improvement in performance obtained by increasing





These two photos show some of the equipment used in isolating the reproductive hormone, progesterone, from the organs of farm animals.





Left: Using a micro-projector to study a cross section of an ovary. Right: Microscopic evaluation of ovaries is involved in the studies of hormone response by cattle and swine described in item at right.

the protein to 28 percent. No further improvement was obtained by increasing the protein level from 28 percent to 32 percent.

Increasing the energy level also improved performance rather uniformly at each of the three protein levels. Response to lysine supplementation was small and inconsistent. Similar results were obtained in a second experiment.

A third experiment involved poults 6-12 weeks of age. The poults were fed diets containing 20 or 24 percent protein and 900 or 1,000 calories per pound productive energy. These diets were tested with and without lysine supplementation.

At the higher energy level, increasing the protein from 20 to 24 percent increased weight gains and improved feed efficiency. At the lower energy level, increasing the protein didn't meaningfully improve either growth or feed efficiency. Lysine supplementation was without effect on weight gains—except on males fed 20-percent protein diets where it improved feed efficiency slightly. This improvement, however, was not statistically meaningful—it may have happened merely by chance.

Seek Basic Information On Several Poultry Respiratory Diseases

NEWCASTLE disease, infectious bronchitis, chronic respiratory disease and infectious sinusitis in poultry flocks are under study at the Experiment Station and Veterinary Medical Research Institute. Chief aim of the studies is to develop practical control methods for these diseases, explains M. S. Hofstad who is directing this work.

Immunization experiments are being conducted to study the effect of inactivated vaccine in the prevention of Newcastle disease. Many of the factors involved in the spread of infectious bronchitis are still unknown; the researchers are attempting to pin down some of these factors.

livestock

Measure Cows' Estrous Response To Hormones

HOW THE estrogenic hormones and progesterone act to induce estrus in spayed cows has been studied at the Iowa Experiment Station under the direction of R. M. Melampy.

One group of cows was injected daily with the female sex hormone, estradiol benzoate, while another group received estradiol benzoate in combination with progesterone. While both groups showed characteristic estrous behavior (bull acceptance) the group receiving both hormones showed a somewhat more marked response.

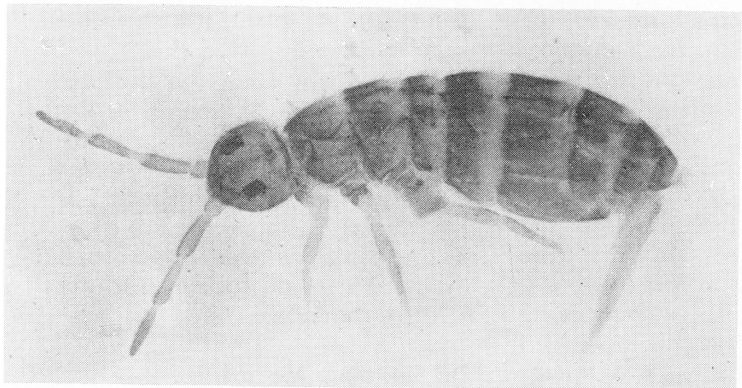
The minimum levels of estradiol benzoate which will induce full estrus have been established. This depends upon the individual animal and ranges from 0.19 mg. to 0.3 mg. of estradiol benzoate. It was also noted that a dosage which would only be conditioning for one animal would induce a full response in another.

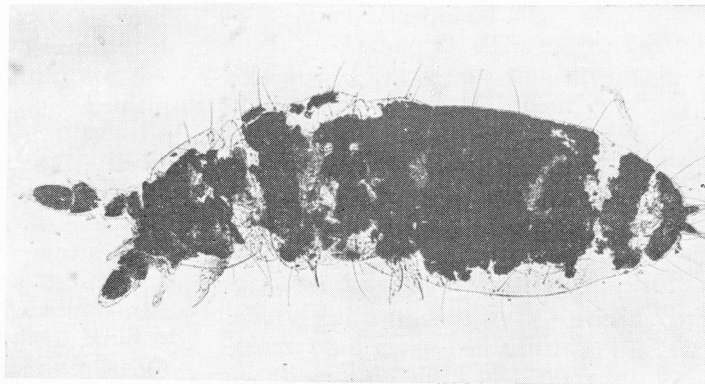
These experiments have been expanded to include studies dealing with inducing estrus and ovulation in sows. Other key personnel working on this project include B. N. Day, L. L. Anderson, J. M. Rakes and L. J. Hanka.

Iowa Supplement Effective With High-Roughage Ration

FEEDLOT TRIALS show that Iowa 10-10-10-15 supplement is effective with a high-roughage corn silage ration in addition to being effective with the high-grain fattening rations for which it was originally designed. These trials also tested the value of soybean meal, torula yeast and brewers yeast additions to this supplement.

The performance of the low-cost supplement, which contains 10 milligrams of stilbestrol and 10 percent urea, was excellent. Addition of either torula yeast or soybean meal increased liveweight gains. However, adding soybean meal raised the cost of gains somewhat. In the case of brewers yeast, pre-





These pictures show two common microscopic Collembola that are present in the agricultural soils of central Iowa. Collembola are present by the millions—and sometimes billions—per acre. They exist to a depth of at least 48 inches. Despite their presence in such great numbers, however, almost nothing is yet known about their significance in agricultural plant growth and crop production.

liminary evidence indicates that benefits obtained were only large enough to pay for the cost of the material, reported Wise Burroughs, E. C. Cheng and C. C. Culbertson who directed these trials.

Develop Better Lines of Swine

BREEDING RESEARCH pointed at improving Iowa swine production continues at the Experiment Station under the direction of L. N. Hazel and J. L. Lush. These studies, made in cooperation with the USDA, include developing and testing inbred lines for litter size, viability, growth rate and carcass quality.

There should be real improvement in carcass quality in the barrows produced by the Station's recently acquired boars with backfat probes of 0.7 to .09 inches. Boars with such extreme meatiness have not been available in the past. Though the meatier pigs require less feed, simultaneous selection for growth rate should be practiced since this characteristic is adversely affected with improved meatiness. C. C. Culbertson, E. A. Kline, A. E. Molln and W. A. Craft are also assisting in these studies.

soils

Seek Information On Tiny Animals Present in Soils

BILLIONS OF microscopic animals, mainly Collembola and mites, are found in the top 4 feet of Iowa agricultural soil. The fantastically large numbers are concentrated in the top soil layers, though they move downward somewhat in the winter months and upward in the spring.

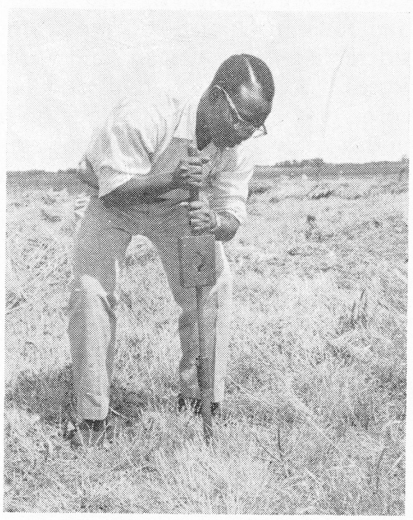
Little is known about the effects of these animals on plant growth and crop production. Most presumably are scavengers, but they probably are of considerable importance to plant growth because of their extreme abundance—sometimes billions of them per acre.

Researchers under the direction of J. H. Lilly have been attempting to learn more about these animals and their importance to Iowa agriculture. It's believed they help break down the plant residues present in the soil. Presumably they also help keep soil pore spaces open and influence both the amount of oxygen available to plant roots and the carbon dioxide level in the soil.

What's Best Time To Apply P_2O_5 To Crops in Rotation?

SHOULD YOU apply the major portion of phosphorus fertilizer to a rotation's corn or oats crop? Research aimed at answering this question has been in progress since 1954 at the Howard County Experiment Farm under the direction of John Webb of the Experiment Station.

In this study P_2O_5 is being applied at the rates of 45 and 90 pounds per acre to a 3-year rotation of corn, oats and mixed meadow. Since a starter fertilizer is considered desirable for this area's corn



Top picture shows the 5-foot soil sampling tube and driver used to take soil samples in 3- or 6-inch layers to be examined for Collembola. Lower photo shows the tube driven down to a depth of 4 feet to collect a sample for analysis.

crop, all treatments except the check include 15 pounds of P_2O_5 in the hill for corn. The remaining 30 or 75 pounds is disked in for corn or oats.

All crops responded to phosphorus fertilization during the experiment. Though there were large carryover effects, the yield record indicates that fertilizer efficiency decreases as the time interval increases between when the fertilizer is applied and the crop is grown. For example, phosphorus applied to the corn crop gave about two-thirds the increase in yield of oats that was obtained from direct application to the oat crop.

Results from the first complete rotation cycle show an advantage of $2.96 per acre for applying the phosphorus ahead of the corn crop, assuming corn is worth $1.25 per bushel, oats $0.60 per bushel and hay $15 per ton. However, future results probably will narrow the advantage, because there's likely to be some carryover from the oats to the corn which could not be measured in this first cycle. This would tend to reduce the response corn made to current applications.

Compare Soil, Water Losses From Rotation, Tillage Treatments

AGRONOMISTS AND AGRICULTURAL ENGINEERS at Iowa State College are confirming that tillage and rotational practices have a considerable influence on soil and water losses. Soil and water losses from corn, oats and meadow have been under study for a number of years on five of Iowa's important soil types. The long-run goals of the research are (1) to compare soil and water losses under various rotation and tillage treatments, (2) to compare the erodibility of the five soils and (3) to find the effects of rainstorms of different intensities. Here are examples of some of the results so far:

On a Marshall silt loam with a 9-percent slope, land in continuous corn suffered an annual average soil loss of 17.2 tons per acre during the period, 1946-57; water loss averaged 2 inches annually. Average soil loss for land in a corn-oats-meadow rotation was 5.7 tons; water loss, 1.3 inches.

On an Ida silt loam with a 12-percent slope and a corn-oats and sweetclover rotation, average annual soil and water losses under surface-planted, up-and-down-hill tillage was 25.2 tons per acre and 3.2 inches, respectively, 1948-57. Surface planting on the contour and contour listing both reduced soil and water losses considerably. And a corn-oats-meadow-meadow rotation combined with contour listing reduced the average soil loss to 1.3 tons and the water loss to 0.6 inch.

On a Seymour silt loam with a 4½-percent slope and a CCOMM rotation, first- and second-year corn averaged a soil loss of 2 tons per acre and a water loss of about 0.75 inch, 1952-57. Continuous corn mulch tilled with a cover crop averaged a soil loss of 0.2 ton and a water loss of 0.1 inch.

On a Carrington silt loam with a 4½-percent slope, results were similar to those on the Seymour silt loam. Both soil and water losses averaged less, however, and both were so small that they couldn't be measured with continuous corn mulch tilled with a cover crop.

On a Grundy silt loam, dry conditions and lack of intense storms in the past few years have resulted in very little erosion under any of the tillage treatments or rotations.

Key personnel in these and other studies of erosion control and water conservation are W. C. Moldenhauer and W. E. Larson.

farm buildings and equipment

Complete Study of Pole-Frame Buildings

MUCH OF THE current interest in pole-frame buildings for farm use has stemmed from their relatively low cost of construction. Agricultural engineers at the Experiment Station, therefore, have been conducting research with pole-frame construction aimed at getting the greatest economy in fabrication consistent with safety and reasonable life expectancy.

Results of the nearly completed study will be made available to the Midwest Farm Plan Service for incorporation into farm building plans, and to other informational agencies.

N. H. Curry, Henry Giese, T. E. Hazen and R. A. Norton of the Experiment Station have been conducting this study and other studies of the selection and use of materials for farm building construction. The research is in cooperation with the USDA regional farm structures research committee.

Do Building Materials Influence Swine Growth?

A STUDY aimed at finding the effects of three hog house building materials on the growth of swine has been completed by the Experiment Station. Apparently, it's the inside temperature which counts. Therefore, *any* building providing favorable conditions would bring about a desirable response.

The three materials—wood with asphalt shingles, aluminum and galvanized steel—were applied as roof and wall coverings to 16 by 20 foot hog houses. All units were provided identical feed and watering equipment, ventilation, lighting, management and nutrition during the test periods covering one winter and three summers.

During the winter, although the animals in the slightly warmer wood houses had an edge in gains and feed efficiency, there was no appreciable difference in pig performance. In the warm weather trials, aluminum-housed animals came out on top twice, with the wood house group performing best the third summer. At night, regardless of material, the buildings came to the same temperature.

Averaging the records for all groups over the summer experiments narrowed the advantage of any one material but did indicate that air temperature at hog level is the real measure of proper environment. The primary dollars and cents consideration is the research workers' finding that for each animal an 0.05-pound-per-day increase in rate of gain is experienced for every degree of average temperature drop in the 85° to 80° F. range and that this added gain is obtained with 0.05 pound less feed per pound of gain.

This experiment was conducted by Hobart Beresford, Henry Giese, N. H. Curry, T. E. Hazen, Damon

V. Catron, Paul Homeyer and C. H. Jefferson.

horticulture

Two-Eared Sweetcorn Is Goal of Breeding Study

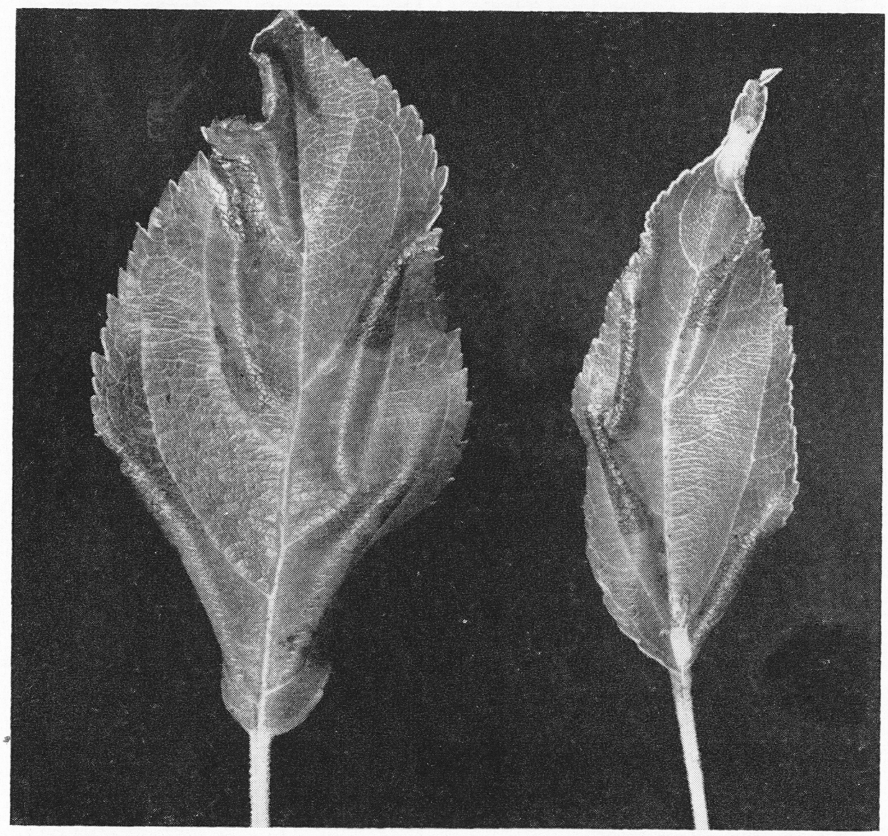
ONE POSSIBLE way to increase the yield of sweetcorn is to have hybrids which will produce more than one usable ear per stalk. It's also possible to increase the yield by developing hybrids with larger and longer ears, but these factors have limits.

More ears per stalk, without too much loss in size of ear and without loss in evenness of maturity between the two ears, is the eventual goal of the sweetcorn breeding program conducted by E. S. Haber and Walter White at the Experiment Station.

This picture shows the relative growth of forsythia in three different media as affected by fertilization. The plants received a nutrient fertilizer at each watering.

Leaf Miner Infests Iowa Apple Trees

AN OUTBREAK of the unspotted tentiform leaf miner has made a dramatic appearance in apple orchards of Iowa. In some orchards trees were nearly defoliated, and terminal leaf buds were activated; new leaves appeared in September. As yet, the factors which contributed to this outbreak are not identified.



An outbreak of the unspotted tentiform leaf miner has introduced a new problem for Iowa apple growers. This photo shows a top view of the typical appearance of the "mines."

The unspotted tentiform leaf miner, a tiny steel-gray moth, first appears about pink-bud stage; thereafter, it averages about one generation every 30 days during the summer. The larva feeds between the upper and lower epidermis of the leaf. A single leaf may bear 8 or 10 of the miners. The pupa is formed in a silken cocoon within a cell formed by rolling over the leaf margin.

Test Lightweight Media For Potting Ornamentals

THE MATERIALS used for potting ornamental plants, for sale, vary considerably throughout the country. This is understandable since soil, facilities, labor, climate and plants being grown also vary considerably from one section of the country to the other. On the whole, however, most growing materials contain peat moss and a sandy loam soil. Gravel and bank sand are also important components.

The greater number of these mixtures have contained relatively heavy materials rather than lightweight components, such as sphagnum moss, perlite and vermiculite. These lightweight media pose problems of maintaining adequate nutrients and water and keeping the

plants from blowing over. Also many growers fear that plants grown in lightweight media will have difficulty rooting-out when planted in soil. Their lightness, however, would be an advantage in mail-order shipments of ornamentals.

To learn whether deciduous ornamental plants could be grown successfully in lightweight media, Experiment Station workers studied fertilization practices, shipping procedures and planting methods, using these media.

Results, as reported by J. P. Mahlstede, indicated that sphagnum-perlite and peat-perlite mixtures can be used successfully for the production of most deciduous ornamental stock. Use of a more acid perlite or peat than those used in the tests, however, would probably make the other media tested more suitable for growing a greater variety of plants.

For continued growth, a complete nutrient fertilizer applied every third watering appeared to have merit. After shipping and field planting, forsythia which had not been fertilized didn't produce as much growth as forsythia which had been fed—regardless of the potting medium used. Forsythia forced in a sphagnum-perlite mixture and fertilized every third watering produced more growth than did forsythia grown in other media and receiving other rates of fertilization.

The use of a box in packaging foliated forsythia plants tended to standardize weights and shipping costs. Polyethylene-kraft paper substituted for the shipping box provided ample protection for the plant material if the plant was "stiff-caned" and contained short growths. Regardless of the method of packaging, medium used or rate of fertilization, there was 100-percent field survival. If plants are forced, however, a more fibrous potting medium is desirable since the plants are not "pot bound" yet and the ball doesn't hold together well.

dairy and food industry

Pasteurization of Liquid Egg Products Studied

RESEARCH directed toward finding practical methods of pasteurizing liquid egg products is under way at the Experiment Station. The work completed so far has been with egg whites, report Paul Hartman, John C. Ayres and Frances Carlin who are cooperating on this project.

Various concentrations of peracetic acid were used to pinpoint its best performance as a pasteurizing agent. Results indicated that the higher levels would reduce the volume of angel cake that could be made from treated albumin, probably because of denaturization of egg proteins. Future work will be pointed toward pasteurization of liquid egg products where some protein denaturization would not have critical effects.

Study Problems of Swiss Cheese Making

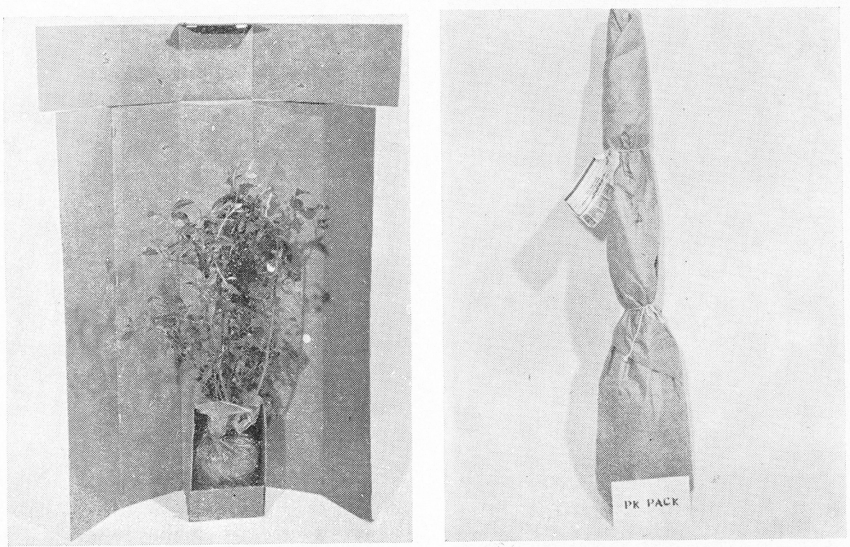
BIGGER CHEESE, bigger problem—spells out the research job confronting Iowa State College dairy researchers who are increasing the size of a Swiss-type cheese in a production change-over.

They've found that manufacturing rindless cheese in 20-pound blocks to replace the 5-pound wheel in current use calls for modifications in the "make," curing and storage processes. To produce a cheese with the desired body, texture and "eye" formation, proper acid development must take place during the "make" process.

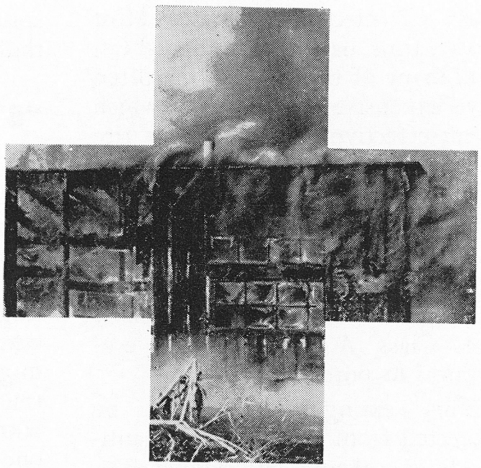
If normal acid development does not occur, the body of the cheese may show mechanical openings after pressing. Being "overset" with too many eyes is another fault. Results indicate that the most desirable eye formation occurs when the cheese has a pH of 5.4 to 5.5 when ready for pressing and not above 5.2 after pressing. Acid development had not been as critical when making the small wheel.

Another problem was the prevention of surface mold growth during curing and storage. This mold growth could be reduced greatly if the amount of air trapped under the wrapper were limited. As a wrapping material, Cryovac proved better than Saran film because it clings more closely to the surface of the cheese, thereby reducing the amount of air available for mold growth.

Researchers are also studying the manufacture, curing and marketing of an aged, rindless cheddar cheese. Work will also be started on the effect of hydrogen peroxide on the microflora in milk to be used in cheese making. These studies are being conducted in cooperation with the USDA. Key personnel include D. D. Deane, F. E. Nelson and F. D. Cohenour.



Here are two of the packages used to ship large ornamental shrubs by mail order. Left: a commercial cardboard box. Right: polyethylene kraft paper which can be used satisfactorily for "stiff-caned" ornamentals.



First-Aid for Farm Fires

The best bet, of course, is to prevent fires before they start. In case of fire on your farm, however, here is some information to help you nip it in the bud or to render fire "first-aid" until fire equipment arrives.

by Norval J. Wardle

FARM FIRES are still often accepted as unfortunate but something that couldn't be helped. Rural areas were the last ones to enter the field of organized fire protection. Many rural fire departments are now organized. And in some states, including Iowa, practically every farm is included in the area of a rural fire department.

But to make fire protection effective, you should know what to do yourself in case of fire on your farm. You can make your farm more fire-safe by having fire "first-aid" equipment and by knowing how to use it. Talk it over with your family and plan what to do if a fire does occur.

Know how and where to report a fire quickly. Have a card with instructions for reporting a fire on your wall by the telephone or on the inside cover of your telephone book. Check with the fire department serving your area on how to report fires to them.

One of the major troubles in controlling farm fires is water supply. A good water supply on a farm has helped save many buildings, their contents, livestock and, in some cases, lives of people. There are three common ways to supply water for fire control: (1) pressure water system, (2) ponds and (3) fire cistern.

For a pressure water system to be effective, the source must be continuing—even when a number of the buildings on the farm are on fire. The usual source on Iowa farms is a pump run by an electric motor. To assure the water supply during a fire, the pump motor should be wired separately from the rest of the system. The pump motor wire should come off the main line *between* the meter and the main switch, and the wire should be underground. This way electricity to all buildings may be cut off, but you still can have an operating water supply.

For ponds to be effective in fire control, they should be within 1,000 feet of the farmstead. If your pond is further away, have tanks available to haul water to the fire.

Fire cisterns should be kept filled and reserved for fire control. Such cisterns should hold 2,000 to 3,000 gallons and should be located within 700 feet of the buildings but not closer than 50 feet. You can get plans for fire cisterns from your county extension director.

Fire Extinguishers . . .

Just as you should have a medical first-aid kit for minor injuries and for first-aid treatment of more serious injuries "while waiting for the doctor," you should have a "fire first-aid kit" for minor fires and while waiting for the fire department. Fire extinguishers are absolutely necessary for fire safety. There are many kinds of fire extinguishers. Unfortunately, no one kind will control all types of fires effectively. But here are some general rules which apply to all fire extinguishers:

1. You and members of your family should learn how to use extinguishers effectively.

2. Follow the directions of the manufacturer for refilling or charging, maintenance and operation.

3. Check your extinguishers every 6 months to see that they're in good working order.

4. Keep extinguishers in regular and definite places so you'll know where they are when needed.

5. Clearly mark the place for keeping a fire extinguisher. (For example, have a red background for the extinguisher, with a red bar below at the floor level or on the floor and one on the wall above.)

Types of Fires . . .

Since there are different kinds of extinguishers for various types of fires, it's a good idea to know about these types of fires—and which extinguisher is best to control each type. There are three main types of fires:

Class A—Wood, trash, paper and similar combustible materials. These fires are best controlled by quickly quenching or cooling with water or with solutions containing large percentages of water.

Class B—Grease, oil, gasoline and other flammable liquids. These fires are best controlled by smothering or blanketing to cut off the oxygen supply.

Class C—Electrical equipment, motors and generators. Here it's important to use an extinguishing agent which doesn't conduct electricity or injure the equipment.

NORVAL J. WARDLE is associate professor of agricultural engineering.

Try to remember this "ABC" classification. It will help you select the right extinguisher. Extinguishers carrying the label of the Underwriters' Laboratories (UL) or the Factory Mutual Laboratories (FM) have been tested and have met exacting requirements of safe construction and performance.

An extinguisher effective with Class A fires is designated by that letter and a preceding numeral which indicates its relative fire extinguishing capacity. A 4-A extinguisher will extinguish approximately four times as much fire as a 1-A extinguisher. Class B extinguishers are given like numerals indicating their comparative extinguishing power. Class C extinguishers don't have a numeral since the actual substance burning is either Class A or B.

There are three general types of fire extinguishers: (1) plain water, (2) water and chemical and (3) chemical. There are several kinds of each type. The more common extinguishers, along with general information about them, are shown in the table.

Controlling "A" Fires . . .

More than 90 percent of farm fires are Class A fires, often resulting in large financial losses. It's the one type of fire you should be most prepared for. There are, however, increasing numbers of Class B (flammable liquids) and Class C (electrical) fires. Most Iowa farms have no extinguishers. And many of those which do, often have expensive extinguishers which aren't effective with the major fire problem.

Water Pump Tank Extinguisher: The number one extinguisher for the farm is the water pump tank. This extinguisher not only is effective with the most common type of fire, Class A, but it's also economical to purchase and refill.

This extinguisher should be protected from freezing. One antifreeze is calcium chloride at 3½ pounds to a gallon of water. You can buy calcium chloride charges that include rust inhibitors. After use, the extinguisher should be well washed out with clean water. Pump and hose should be empty before refilling.

Pump tanks usually are equipped with a hose 2 to 4 feet long. But you can increase their effectiveness by replacing with a 20- to 25-foot hose.

Locate the water pump tank at some central place in your farmyard. You might place it in a special box on the electric wiring distribution pole. Then when you need the extinguisher, you can pull the main electric switch so there'll be no electrical fires to contend with. In use, play the water stream on the base of the fire and slowly work up as the fire is extinguished. Often the effectiveness of the extinguisher can be increased through spraying the stream by placing your thumb part way over the nozzle.

Shown here are four of the types of fire extinguishers discussed in this article as suitable for farm fire first-aid. From left: carbon dioxide, dry compound (2), gas cartridge, water pump tank.

"B" and "C" Fires . . .

Class B and C fires are increasing on farms. Water pump tank extinguishers aren't easily effective with these fires. However, notice in the table that one group of extinguishers, chemical, is effective with both B and C fires. You might have one of these on your tractor, one in the shop by the entrance door, one in your car and one in the kitchen near the range.

Vaporizing Liquid Extinguishers: This is the most common type of the chemical extinguishers. It's approved for both B and C fires. Basic material in most of these extinguishers is carbon tetrachloride in liquid form. For use, follow instructions on the name plate. Carbon "tet" extinguishers shouldn't be expected to control other than very small Class A fires.

To refill use only carbon tetrachloride that has been prepared for fire extinguishers. Commercial carbon tetrachloride contains traces of water which may react to form acids that will corrode extinguisher parts and conduct electricity.

When you play carbon tetrachloride upon a fire, the liquid immediately evaporates and forms a smothering blanket of vapor which is heavier than air and smothers the fire. When used on flammable liquids in tanks or other containers, direct the stream to hit the opposite side of the container—not directly into the liquid. On other fires, direct the stream at the base of the fire and sweep it with recurrent movements and spurts. Keep a supply of carbon tetrachloride on hand so you can refill the extinguisher immediately after use.

CAUTION: Carbon tetrachloride is a highly volatile substance, and the vapors are extremely poisonous. Carbon "tet" extinguishers should be used only in the open. If they must be used in an enclosed area, the area should be thoroughly and forcefully aerated before anyone enters the area. There are only two places that such extinguishers should properly be used: (1) on the tractor, (2) or on the car. They should be used for engine fires only, not for fires

inside the car. It's practically impossible to aerate the cushions sufficiently.

Some vaporizing liquid extinguishers have chlorobromomethane in them. This chemical is equally toxic. Use the same precautions as for carbon "tet" extinguishers.

Carbon Dioxide (CO_2) Extinguishers: These extinguishers have become very popular in the last few years. They're easy to handle and quite effective in controlling gasoline and electrical fires. And they're of some value on small Class A fires.

CO_2 extinguishers are easily recognized by the funnel-like discharge nozzle. They do need special refilling equipment. Some of them must be sent back to the manufacturer for refilling. Find where you can get the extinguisher refilled at the time you purchase it. Some fire departments have facilities for refilling this type of extinguisher. It's well to have an extra carbon-dioxide extinguisher for protection while the used one is being recharged—especially if it must be sent some distance.

Carbon dioxide is an inert gas, heavier than air. Released around a burning object, it replaces or dilutes oxygen until it won't support combustion. As carbon dioxide is expelled from the extinguisher, it cools, and about 30 percent forms into carbon dioxide "snow" or "dry ice." This snow has some cooling effect and may aid in preventing flashback when the fire is small. But this cooling effect is negligible compared with that of water. Carbon dioxide's principal extinguishing effect is that of smothering.

Discharge the carbon dioxide as near the fire as possible. Apply first at the near edge of the fire and sweep the fire in short, recurrent discharges of the carbon dioxide until the fire is out.

Weigh a carbon dioxide extinguisher at least every 6 months. If the weight loss is more than 10 percent of the rated capacity, the extinguisher should be recharged.

Dry Chemical Extinguishers: This is the most recently developed type, and there's quite a bit of variation within this type. Nozzles are different. Some disperse a broad, fan-shaped stream for greatest coverage at close range. Others disperse a narrow, fan-shaped stream to attack fires from a distance. Know which yours is.

The extinguishing agent is basically sodium bicarbonate, with added components to produce a water-repellent and free-flowing powder. Powder is expelled by pressure from a carbon dioxide cartridge which must be replaced each time the extinguisher is used.

Weigh the cartridge at least once a year. If the loss in weight is more than that stated on the name plate, replace it. Use only chemicals and cartridges recommended by the manufacturer. Some extinguishers use air pressure to discharge the powder. They have a pressure gauge, and the pressure may be renewed as needed at any service station.

Dry chemical extinguishers are effective against both Class B and C fires. The powder has about the same electrical conductivity as air. Direct the stream at the base of the fire so as to blanket it.

Other Extinguishers: Many other kinds of extinguishers are manufactured and available on the market. But many of these are for special situations. The four which we've described are best adapted for fire first-aid on the farm.

Other Equipment . . .

Your farm should have one good ladder reserved for fire control. Don't paint the ladder; shellac or varnish it instead. Paint a sign on the ladder—"Fire Use Only." Hang it on the outside wall of a centrally located building. Put another sign there—"Keep Fire Ladder Here."

If you have no other water supply available, keep two or three barrels full of water. Keep anti-freeze in the barrels—2 pounds of calcium chloride per gallon is satisfactory. Also keep three or four buckets in each barrel. Paint the buckets and barrels red or paint "Fire" on each in red.

Facts About Fire Extinguishers

Type of extinguisher	Extinguisher effect	Effective with fires of Class A	B	C	How to operate	Length of discharge	Recharge	Protection from freezing
PLAIN WATER								
Pump tank	cooling	yes	no	no	pump by hand	30-40 feet	after use	approved anti-freeze chemicals may be added to water
Gas cartridge	cooling	yes	no	no	turn over, bump on ground	30-40 feet	after use	
WATER AND CHEMICALS								
Soda-acid	cooling	yes	no	no	turn over	30-40 feet	annually	keep in heated cabinet if building is unheated—never add anti-freeze
Foam	cooling smothering	yes	yes	no	turn over	30-40 feet	annually	
Loaded stream	cooling oxidation inhibiting	yes	yes	no	turn over, bump on ground	30-40 feet	after use	none needed
CHEMICAL								
Vaporizing liquid	smothering	*	yes	yes	pump by hand	20-30 feet	after use	none needed
Carbon dioxide	smothering	*	yes	yes	open valve at top	3-6 feet	after use	none needed
Dry compound	smothering	*	yes	yes	open valve at top	8-12 feet	after use	none needed

*Effective only on small surface fires.

Farm Outlook...

by Francis A. Kutish

BUMPER CROPS dominate the Iowa farm outlook picture this fall.

The nation's feed grain supply is considerably more than ample. For several years, feed grain output has topped feed grain use for all purposes. Each fall we have added to our carryover stocks of old grain. From about 20 million tons in 1952, carryover stocks this fall are up to around 60 million tons.

This year feed-grain output again is outrunning use. Carryover stocks next fall will be over 75 million tons. CCC owns a substantial portion of these grain stocks. Another important share is held under CCC seal on farms (see chart).

The pressure of our growing feed supply has pushed feed grain prices down. This is true in spite of price supports. Central Corn Belt prices are in the area of 90 cents to a dollar a bushel now, compared with around a $1.40 price 6 years ago.

The bumper feed grain supply at relatively low prices is bringing about an increase in hog production. Farmers in the main hog-raising states indicated they are raising 17 percent more pigs during the June-November period than a year ago. The national fall pig crop, thus, is probably up around 15 percent.

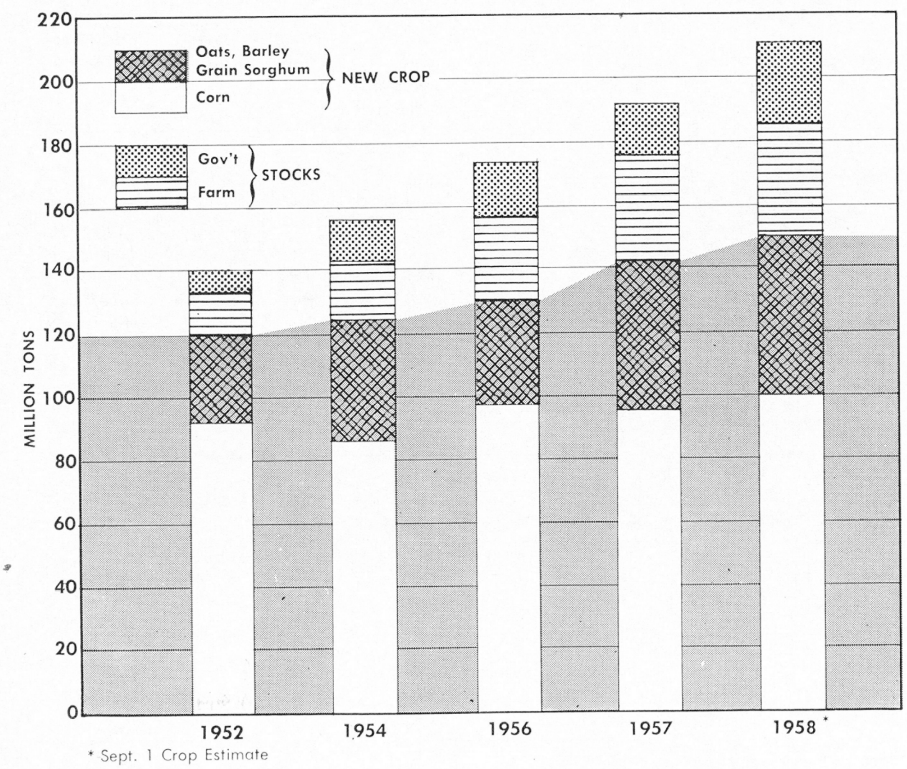
The big supply of cheap feed likewise is behind the keen scramble for feeder cattle this fall. It has resulted in feeders bidding up the price of feeder cattle in an effort to get cattle to convert low value feed into beef.

It will take a substantial increase in feed use—either through more livestock or more exports or both—to bring about a balance between feed grain production and feed grain supply. More livestock, of course, will mean lower livestock prices later on. Livestock prices, therefore, are likely to be at modest levels until feed grain production, consumption and carryover are brought into better balance.

In the last 2 years, both hog prices and cattle prices have been generally high relative to corn prices. The next few years will see a lowering of this relationship.

The bumper supply of corn and the resulting lower corn prices will be felt first on hogs. Hog prices likely will be dropping in 1959 and 1960 to a more nearly average relationship with the price of corn. Steer prices, on the other hand, are likely to continue above their average relationship with corn for the next couple years. Total beef production isn't likely to be large enough until the early 1960's, however, to pull fat steer prices back in line with corn.

Total Feed Grain Supply (basis, new crop year)



* Sept. 1 Crop Estimate

Soybeans . . .

The 1958 soybean crop is by far the largest we've ever had. The Sept. 1 USDA estimate of 561 million bushels is about 80 million bushels more than last year's harvest (see chart).

This prospective large supply of soybeans has pushed down the harvest price. New crop beans are moving to market at well below the loan level. There's every reason for Iowa farmers to store all the beans they can this fall—either on their own farms or at elevators.

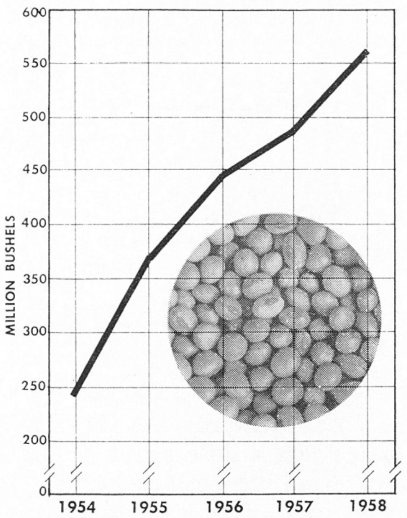
Soybean use has been rising rapidly in recent years. Even though new-record crops have been recorded every year for the last few years, we've been able to get rid of the output. And in some of those years, we even have sizable price runups.

The rapid growth of soybean use stems from a basic shortage of high protein concentrates for livestock and poultry. Soybean meal is an important high protein feed. If we had fed the rations recommended by livestock and protein nutritionists to all of our livestock and poultry, we'd have needed still more soybeans than we had.

The export market is the other force resulting in the expanding use of our soybeans. Shipments abroad have gone up sharply the last few years.

The 1958 bean crop presents such a large output increase, how-

United States Soybean Crops



ever, that it appears greater than can be absorbed at the soybean loan price level. More soybean meal will be used in the coming year. The problem comes from the soybean oil. We'll have more lard and cottonseed oil to compete with the larger supply of soybean oil.

Our net increase in domestic edible oil looks larger than the increased world requirements. So while we can look forward to some increase in our exports, there's a question how much more can be pushed abroad. Our current soybean oil export market is based heavily on government subsidy in the form of "Public Law 480" shipments.

A sufficient amount of beans probably will go into loan this fall to bring soybean prices back to loan level by late winter or spring. But world events are about the only thing that could chase the price of soybeans much above the loan level in the next year—considering the large supply now on hand.

The last two price bulges in soybeans were the direct result of production outside of the United States (see chart). The runup in soybean prices in the spring of 1956 was a result of the winter freeze in the Mediterranian area of Europe. It cut the olive oil crop. At the same time, we began the Public Law 480 program of subsidizing exports of surplus farm products. The combination of the two proved a natural for soybeans. So our exports shot up in early 1956.

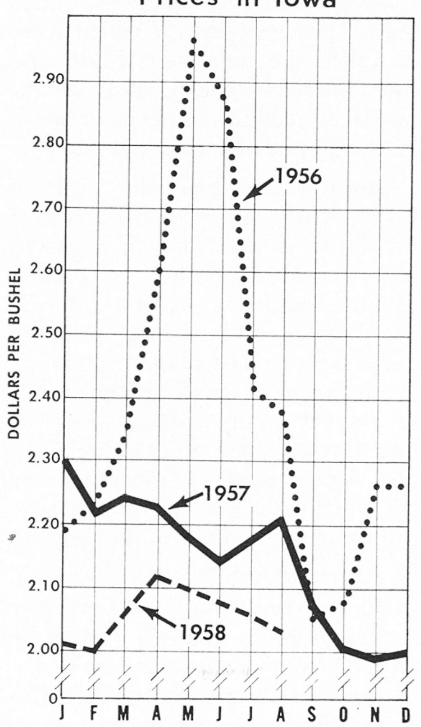
Then, in the fall of 1956, there was the Suez crisis. This war scare produced a post-harvest runup in soybean prices. Prices reached their seasonal peak in December—something very unusual.

Hogs . . .

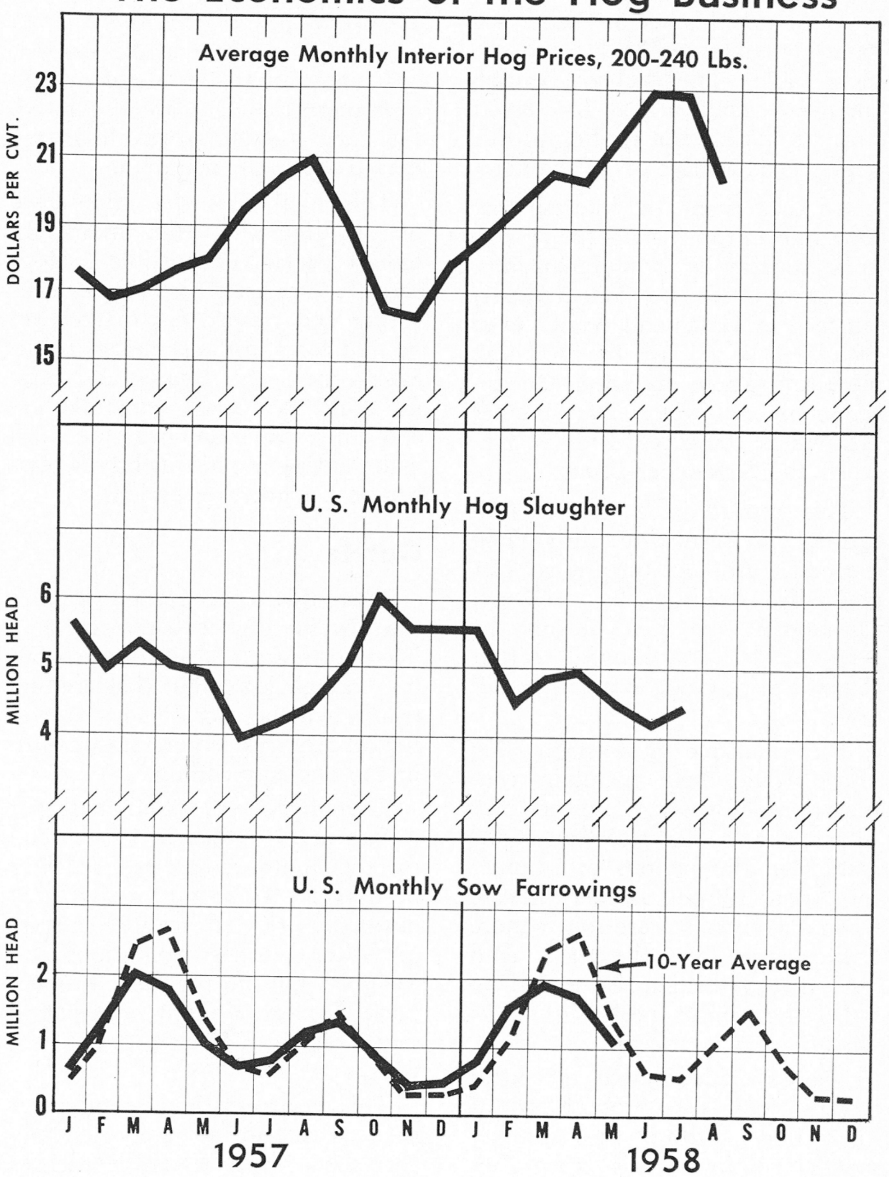
Hog prices are extremely sensitive to changes in supply. It takes only a small change in pork supply to produce a sizable change in hog prices.

Hog slaughter during the first 6 months in 1958 was down moderately from the first 6 months of 1957. But the hog prices were

Monthly Average Soybean Prices in Iowa



The Economics of the Hog Business



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substantially higher. This is evident from a study of the chart on hog prices.

Farmers are raising about 15 percent more fall pigs than a year ago. That's why farmers can expect significantly lower hog prices this coming winter and spring compared with a year ago. The big difference will be the absence of a sharp winter price rise this year. Rather the winter market probably will be more stable. The level will be high enough to make it pay to convert corn into pork. But feeding profits will be below those of last winter.

Another point of interest that shows up in the chart is the change in seasonality of sow farrowings. Farrowings are no longer badly bunched in March and April—even though these are still the two high months. There has been an increase in both winter and summer farrowings compared with March, April and September litters.

This results in a greater uniformity in farrowing throughout the year. And, in turn, it is: (1) gradually making less seasonal variation in hog prices during the year and (2) resulting in earlier summer price peaks and earlier fall price lows.

The resulting more stable hog price should help maintain consumption of pork. Fewer consumers need to be priced out of the market in the periods of summer short pork supply, as was the case when farrowings were much more uneven throughout the year. And less price reduction is needed to move the winter peak supply of pork.

There's evidence that the trend toward increased proportions of farrowings during the summer months continued this year. But there's still room for further leveling out of farrowings both in summer and winter.

Now that hog numbers are increasing in response to the plentiful supply of cheap feed, we can expect to move into the downward side of the hog price cycle. Past experience suggests that this downtrend in prices will run through 1959 and possibly 1960. Yet, in no year *as a whole* in the last 15, did hogs fail to pay some margin over market price of the feeds fed. But they *were* unprofitable in the months of peak marketing.

This spells out the importance of avoiding the peak marketing months wherever possible. Hogs farrowed as early as possible next spring and pushed for market can be sold early in the summer or fall. Sales during the summer and early fall of 1959 should command a several-dollar premium over the sales made during the November-December peak marketing period.

Cattle . . .

This fall's feeder cattle prices are considerably higher than a year ago. Feed costs are a shade lower—but not enough lower but that feeding profits will be considered narrower for feeders this coming season than in the one just ending.

There'll be more total meat per person in 1959 than in 1958. And the total number of cattle fed will be large. This may easily hold down the price of fat cattle in spite of better business conditions and the good demand for beef. Prudent cattle feeders are not anticipating much higher fed cattle prices next year.

This year's cattle feeding prospect figures to be one of selling your feed (some of which, such as hay and pasture, has low cash value) plus a little profit. On the other hand, the business picture and cattle cycle offer less risk in feeding than in many years.

In this part of the cattle cycle, however, the high prices of feeder cattle make it necessary for the feeder to use good judgment and careful selection in buying. This is especially important to avoid paying too much for feeders. There's a tendency to upgrade feeders—cattle that would grade "just good" are sold as good to choice. If fat cattle prices are rising, the stronger market can cover up a poor job of buying. This is *not* likely to be the case this year.

The second necessity is to do a good job of feeding. When feed is relatively cheap, there's less importance in cheapening down the feeding ration by using roughages. Corn generally is cheap compared with other feed costs. When feeder cattle are relatively high, and corn relatively cheap, most of the profit in feeding comes as a result of the pounds of gain put on.

Margins between the cost of feeder cattle and the sale price of fat cattle will be small or negative. Since cheaper grades of feeders usually require a margin between the buying and selling price to make a profit, the plainer grades of cattle are at a disadvantage in the feeding program. Also, when the numbers of cattle on feed are large and when feed is plentiful and cheap, there's ordinarily less than the usual premium for feeding cattle to a high finish.

As between calves and yearlings, there's little to cause a farmer to switch from a program that has worked well for him the last few years.